TORQ Analysis of Operations Research Analysts to Statisticians

INPUT SECTION:

Transfer	Title	O*NET	Filters		
From Title:	Operations Research Analysts	15-2031.00	Abilities:	Importance LeveL: 50	Weight: 1
To Title:	Statisticians	15-2041.00	Skills:	Importance LeveL: 69	Weight: 1
Labor Market Area:	Maine Statewide		Knowledge:	Importance Level: 69	Weight: 1

OUTPUT SECTION:

Grand TORQ: 86

Ability TORQ	Skills TORQ	Knowledge TORQ
Level 92	Level 83	Level 82

Gaps To Narrow if Possible

Ability	Level	Gap	Impt
Speed of Closure	44	23	50
Mathematical Reasoning	76	9	90
Perceptual Speed	42	14	56
Number Facility	75	9	81
Near Vision	60	7	75
Selective Attention	50	8	65
Information Ordering	62	7	68
Speech Recognition	48	6	62
Written Comprehension	69	5	68
Inductive Reasoning	64	4	78
Deductive Reasoning	66	4	75
Written Expression	66	4	62
Speech Clarity	50	4	62
Oral Comprehension	67	3	68

Upgrade These Skills

Skill	Level	Gap	Impt
Learning Strategies	73	20	69
Instructing	74	18	74
Coordination	72	10	74
Time Management	68	9	78
Writing	80	7	81
Active Learning	84	4	86
Speaking	72	1	78

Knowledge to Add

Knowledge	Level	Gap	Impt
English Language	63	10	85
Computers and Electronics	74	1	85

LEVEL and IMPT (IMPORTANCE) refer to the Target Statisticians. GAP refers to level difference between Operations Research Analysts and Statisticians.

ASK ANALYSIS

Ability Level Comparison - Abilities with importance scores over 50

Description	Operations Research Analysts	Statisticians	Importance
Mathematical Reasoning	67	76	90
Number Facility	66	75	81
Inductive Reasoning	60	64	78
Deductive Reasoning	62	66	75
Near Vision	53	60	75
Oral Comprehension	64	67	68
Written Comprehension	64	69	68
Oral Expression	64	64	68
Information Ordering	55	62	68
Category Flexibility	57	55	68
Problem Sensitivity	57	55	65
Selective Attention	42	50	65
Written Expression	62	66	62
Speech Recognition	42	48	62
Speech Clarity	46	50	62
Flexibility of Closure	51	50	59
Perceptual Speed	28	42	56
Speed of Closure	21	44	50

Skill Level Comparison - Abilities with importance scores over 69

Description	Operations Research Analysts	Statisticians	Importance
Reading Comprehension	86	73	88
Active Learning	80	84	86
Critical Thinking	82	77	85
Active Listening	76	71	83
Mathematics	91	80	83
Writing	73	80	81
Speaking	71	72	78

Time Management	59	68	78
Science	73	70	76
Coordination	62	72	74
Instructing	56	74	74
Complex Problem Solving	85	69	74
Programming	79	57	73
Judgment and Decision Making	82	68	70
Learning Strategies	53	73	69

Knowledge Level Comparison - Knowledge with importance scores over 69

Description	Operations Research Analysts	Statisticians	Importance
Mathematics	93	80	92
Computers and Electronics	73	74	85
English Language	53	63	85

Experience & Education Comparison

Related Work Experience Comparison

Description	Operations Research Analysts	Statisticians
10+ years	0%	0%
8-10 years	0%	5%
6-8 years	4%	0%
4-6 years	8%	37%
2-4 years	29%	22%
1-2 years	8%	32%
6-12 months	8%	0%
3-6 months	0%	0%
1-3 months	0%	0%
0-1 month	0%	1%
None	41%	0%

Required Education Level Comparison

Description	Operations Research Analysts	Statisticians
Doctoral	12%	37%
Professional Degree	0%	0%
Post-Masters Cert	0%	5%
Master's Degree	70%	27%
Post-Bachelor Cert	0%	0%
Bachelors	16%	30%
AA or Equiv	0%	0%
Some College	0%	0%
Post-Secondary Certificate	0%	0%
High Scool Diploma or GED	0%	0%
No HSD or GED	0%	0%

Operations Research Analysts	Statisticians
Most Common Educational/Training Requirement:	
Master's degree	Master's degree
Job Zone Comparison	
5 - Job Zone Five: Extensive Preparation Needed	5 - Job Zone Five: Extensive Preparation Needed

Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. For example, surgeons must complete four years of college and an additional five to seven years of specialized medical training to be able to do their job.	Extensive skill, knowledge, and experience are needed for these occupations. Many require more than five years of experience. For example, surgeons must complete four years of college and an additional five to seven years of specialized medical training to be able to do their job.
A bachelor's degree is the minimum formal education required for these occupations. However, many also require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).	A bachelor's degree is the minimum formal education required for these occupations. However, many also require graduate school. For example, they may require a master's degree, and some require a Ph.D., M.D., or J.D. (law degree).
Employees may need some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training.	Employees may need some on-the-job training, but most of these occupations assume that the person will already have the required skills, knowledge, work-related experience, and/or training.

Tasks

Operations Research Analysts

Core Tasks

Generalized Work Activities:

- Analyzing Data or Information - Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Making Decisions and Solving Problems - Analyzing information and evaluating results to choose the best solution and solve problems.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Processing Information - Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.

Specific Tasks

Occupation Specific Tasks:

- Analyze information obtained from management in order to conceptualize and define operational problems.
- Break systems into their component parts, assign numerical values to each component, and examine the mathematical relationships between them.
- Collaborate with others in the organization to ensure successful implementation of chosen problem solutions.
- Collaborate with senior managers and decision-makers to identify and solve a variety of problems, and to clarify management objectives.
- Define data requirements; then gather

Statisticians

Core Tasks

Generalized Work Activities:

- Analyzing Data or Information - Identifying the underlying principles, reasons, or facts of information by breaking down information or data into separate parts.
- Interacting With Computers - Using computers and computer systems (including hardware and software) to program, write software, set up functions, enter data, or process information.
- Getting Information - Observing, receiving, and otherwise obtaining information from all relevant sources.
- Processing Information - Compiling, coding, categorizing, calculating, tabulating, auditing, or verifying information or data.
- Communicating with Supervisors, Peers, or Subordinates - Providing information to supervisors, co-workers, and subordinates by telephone, in written form, e-mail, or in person.

Specific Tasks

Occupation Specific Tasks:

- Adapt statistical methods in order to solve specific problems in many fields, such as economics, biology and engineering.
- Analyze and interpret statistical data in order to identify significant differences in relationships among sources of information.
- Apply sampling techniques or utilize complete enumeration bases in order to determine and define groups to be surveyed.
- Design research projects that apply valid scientific techniques and utilize information obtained from baselines or historical data in order to structure uncompromised and efficient analyses

and validate information, applying judgment and statistical tests.

- Design, conduct, and evaluate experimental operational models in cases where models cannot be developed from existing data.
- Develop and apply time and cost networks in order to plan, control, and review large projects.
- Develop business methods and procedures, including accounting systems, file systems, office systems, logistics systems, and production schedules.
- Formulate mathematical or simulation models of problems, relating constants and variables, restrictions, alternatives, conflicting objectives, and their numerical parameters.
- Observe the current system in operation, and gather and analyze information about each of the parts of component problems, using a variety of sources.
- Perform validation and testing of models to ensure adequacy; reformulate models as necessary.
- Prepare management reports defining and evaluating problems and recommending solutions.
- Specify manipulative or computational methods to be applied to models.
- Study and analyze information about alternative courses of action in order to determine which plan will offer the best outcomes.

Detailed Tasks

Detailed Work Activities:

- advise clients or customers
- advise governmental or industrial personnel
- analyze operational or management reports or records
- analyze scientific research data or investigative findings
- assist with business or managerial research
- collect scientific or technical data
- collect statistical data
- communicate technical information
- compile numerical or statistical data
- confer with research personnel
- create mathematical or statistical diagrams or charts
- design computer programs or programming tools
- develop management control systems
- develop mathematical ideas or interpretations
- develop mathematical simulation models
- develop or maintain databases

uncompromised and efficient analyses.

- Develop an understanding of fields to which statistical methods are to be applied in order to determine whether methods and results are appropriate.
- Develop and test experimental designs, sampling techniques, and analytical methods.
- Evaluate sources of information in order to determine any limitations in terms of reliability or usability.
- Evaluate the statistical methods and procedures used to obtain data in order to ensure validity, applicability, efficiency, and accuracy.
- Examine theories, such as those of probability and inference in order to discover mathematical bases for new or improved methods of obtaining and evaluating numerical data.
- Identify relationships and trends in data, as well as any factors that could affect the results of research.
- Plan data collection methods for specific projects, and determine the types and sizes of sample groups to be used.
- Prepare data for processing by organizing information, checking for any inaccuracies, and adjusting and weighting the raw data.
- Process large amounts of data for statistical modeling and graphic analysis, using computers.
- Report results of statistical analyses, including information in the form of graphs, charts, and tables.
- Supervise and provide instructions for workers collecting and tabulating data.

Detailed Tasks

Detailed Work Activities:

- advise governmental or industrial personnel
- analyze scientific research data or investigative findings
- analyze social or economic data
- collect scientific or technical data
- collect social or personal information
- collect statistical data
- communicate technical information
- compile numerical or statistical data
- confer with research personnel
- confer with scientists
- create mathematical or statistical diagrams or charts
- develop mathematical ideas or interpretations
- develop mathematical simulation models
- develop or maintain databases
- develop policies, procedures, methods, or

- develop records management system
- develop tables depicting data
- direct and coordinate scientific research or investigative studies
- evaluate management programs
- explain complex mathematical information
- follow statistical process control procedures
- make presentations
- obtain information from individuals
- perform statistical modeling
- plan scientific research or investigative studies
- prepare reports
- prepare reports for management
- prepare technical reports or related documentation
- program computers for management analysis applications
- program computers using existing software
- provide expert testimony on research results
- recommend further study or action based on research data
- resolve engineering or science problems
- select business applications for computers
- use computer application flow charts
- use computers to enter, access or retrieve data
- use cost benefit analysis techniques
- use interpersonal communication techniques
- use knowledge of investigation techniques
- use library or online Internet research techniques
- use long or short term production planning techniques
- use mathematical or statistical methods to identify or analyze problems
- use object-oriented computer programming techniques
- use project management techniques
- use quantitative research methods
- use relational database software
- use scientific research methodology
- use spreadsheet software
- use statistical cost estimation methods
- use word processing or desktop publishing software
- write scholarly or technical research papers
- write technical specifications for computer systems, software or applications

Technology - Examples

standards
- develop tables depicting data
- evaluate reliability of source information
- explain complex mathematical information
- follow statistical process control procedures
- interpret charts or tables for social or economic research
- make presentations
- perform statistical analysis
- perform statistical analysis in physical science or geological research
- perform statistical modeling
- plan scientific research or investigative studies
- plan surveys of specified group or area
- prepare reports
- prepare technical reports or related documentation
- provide expert testimony on research results
- recognize interrelationships among social statistics or indicators
- recommend further study or action based on research data
- use computers to enter, access or retrieve data
- use knowledge of investigation techniques
- use mathematical or statistical methods to identify or analyze problems
- use quantitative research methods
- use relational database software
- use scientific research methodology
- use spreadsheet software
- use word processing or desktop publishing software
- write scholarly or technical research papers

Technology - Examples

Analytical or scientific software

- Aptech Systems GAUSS software
- Automatic Forecasting Systems Autobox
- Camfit Data Limited Microfit
- Cytel StatXact
- Data Description Data Desk software
- Econometric Software LIMDEP
- GraphPad Software GraphPad Prism
- Insightful S-PLUS
- Minitab software

Analytical or scientific software

- A mathematical programming language AMPL
- Business Forecast Systems Forecast Pro
- Claritas PRIZM NE
- ESRI ArcExplorer
- General algebraic modeling system GAMS
- Hyperion Solutions Hyperion Intelligence
- iGrafx software
- ILOG OPL-CPLEX Development System
- Imagine That Extend OR
- Insightful S-PLUS
- LINDO Systems LINGO
- Mesquite Software CSIM
- Mixed integer optimizer MINTO
- ProModel software
- Rockwell Automation Arena
- SAS software
- SPSS software
- Stanford Business Software MINOS
- Stanford Business Software SNOPT
- Statistical software
- Telelogic System Architect
- The Mathworks MATLAB
- The MathWorks Simulink
- Wolfram Research Mathematica

Charting software

- Microsoft Office Visio

Computer aided design CAD software

- Mathsoft Mathcad

Computer aided manufacturing CAM software

- Dassault Systemes CATIA software

Data base management system software

- MySQL software

Data base reporting software

- Business Objects Crystal Reports
- Muthen & Muthen MPlus
- NCSS Power Analysis and Sample Size PASS
- Quantitative Micro Software EViews
- RAT-STATS
- SAS JMP
- SAS software
- Scientific Software International SSI Hierarchical Linear and Non-Linear Modeling HLM
- Scientific Software International SSI LISREL
- SPSS Amos
- SPSS AnswerTree
- SPSS software
- StataCorp Stata
- Stat-Ease Design-Ease
- Stat-Ease Design-Expert
- Statistical Solutions BMDP
- StatPoint STATGRAPHICS Centurion
- StatSoft STATISTICA software
- SuperANOVA
- Systat Software SigmaPlot
- Systat Software SigmaStat
- The Mathworks MATLAB
- UNISTAT Statistical Package
- Visual Numerics TS-WAVE
- XGobi
- XLISP-STAT

Data base user interface and query software

- IBM DB2
- Microsoft Access
- Oracle software
- Structured query language SQL

Data mining software

- Angoss KnowledgeSEEKER

Operations Research Analysts	Statisticians
• Strategic Reporting Systems ReportSmith	• NCR Teradata Warehouse Miner
Data base user interface and query software	• SAS Enterprise Miner
• Microsoft Access	Development environment software
• Oracle software	• Common business oriented language COBOL
• Structured query language SQL	• Formula translation/translator FORTRAN
Development environment software	• Microsoft Visual Basic
• C	Object or component oriented development software
• Microsoft Visual Basic	• C++
Map creation software	• Python
• ESRI ArcGIS software	• R
• Microsoft MapPoint	• Sun Microsystems Java
Object or component oriented development software	• Sybase PowerBuilder
• C++	Object oriented data base management software
• R	• Microsoft Visual FoxPro
• Sun Microsystems Java	Office suite software
• Sybase PowerBuilder	• Microsoft Office
Office suite software	Operating system software
• Microsoft Office	• UNIX
Presentation software	Presentation software
• Microsoft PowerPoint	• Microsoft PowerPoint
Project management software	Spreadsheet software
• Microsoft Project	• Microsoft Excel
Spreadsheet software	Word processing software
• Microsoft Excel	• Microsoft Word
Word processing software	Tools - Examples
• Microsoft Word	• Desktop computers
Tools - Examples	• Laptop computers
• Desktop computers	• Personal computers
• Mainframe computers	
• Laptop computers	
• Personal computers	

Labor Market Comparison

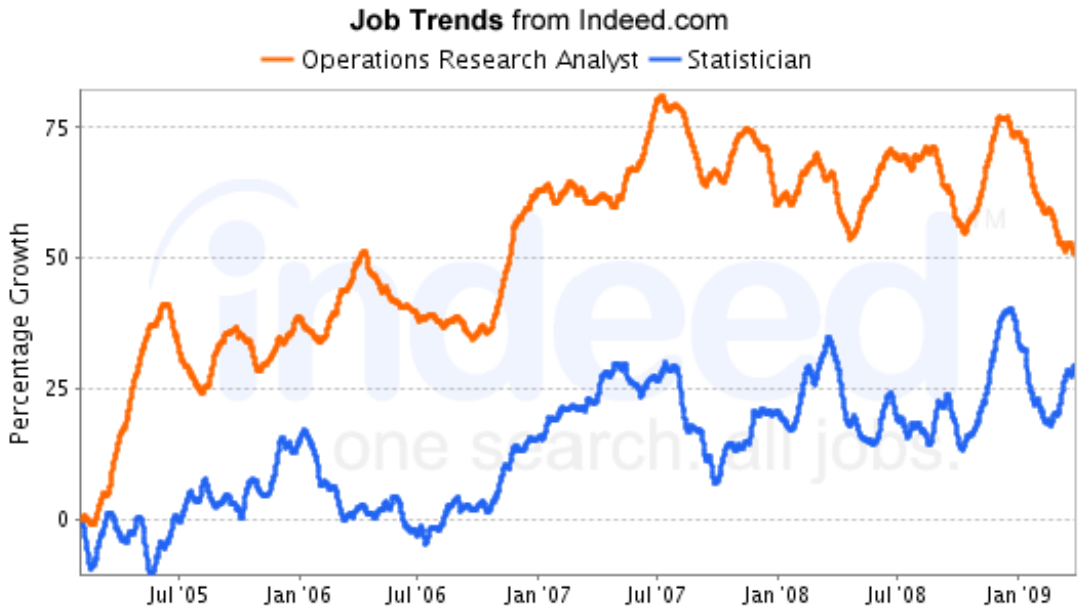
Description	Operations Research Analysts	Statisticians	Difference

Median Wage	$ 64,140	$ 56,620	$(7,520)
10th Percentile Wage	$ 41,690	$ 38,420	$(3,270)
25th Percentile Wage	N/A	N/A	N/A
75th Percentile Wage	$ 75,720	$ 65,440	$(10,280)
90th Percentile Wage	$ 87,250	$ 76,200	$(11,050)
Mean Wage	$ 63,700	$ 56,150	$(7,550)
Total Employment - 2007	180	40	-140
Employment Base - 2006	187	37	-150
Projected Employment - 2016	210	39	-171
Projected Job Growth - 2006-2016	12.3 %	5.4 %	-6.9 %
Projected Annual Openings - 2006-2016	6	1	-5

National Job Posting Trends

Trend for Operations Research Analysts

Trend for Statisticians



Data from Indeed

Recommended Programs

Biostatistics

Biostatistics. A program that focuses on the application of descriptive and inferential statistics to biomedical research and clinical, public health, and industrial issues related to human populations. Includes instruction in mathematical statistics, modeling, clinical trials methodology, disease and survival analysis, longitudinal analysis, missing data analysis, spatial analysis, computer tomography, biostatistics consulting, and applications to such topics as genetics, oncology, pharmacokinetics, physiology, neurobiology, and biophysics.

No schools available for the program

Mathematics

Mathematics, General. A general program that focuses on the analysis of quantities, magnitudes, forms, and their relationships, using symbolic logic and language. Includes instruction in algebra, calculus, functional analysis, geometry, number theory, logic, topology and other mathematical specializations.

Institution	Address	City	URL
University of New England	11 Hills Beach Rd	Biddeford	WWW.UNE.EDU
Bowdoin College	5700 College Station - President's Office	Brunswick	www.bowdoin.edu
Bowdoin College	5700 College Station - President's Office	Brunswick	www.bowdoin.edu
University of Maine at Farmington	224 Main St	Farmington	www.umf.maine.edu
University of Maine at Farmington	224 Main St	Farmington	www.umf.maine.edu
Bates College	2 Andrews Road, 2 Lane Hall	Lewiston	www.bates.edu/
Bates College	2 Andrews Road, 2 Lane Hall	Lewiston	www.bates.edu/
University of Maine		Orono	www.umaine.edu/
University of Maine		Orono	www.umaine.edu/
University of Maine		Orono	www.umaine.edu/
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu
University of Maine at Presque Isle	181 Main St	Presque Isle	www.umpi.maine.edu
Saint Josephs College	278 Whites Bridge Rd	Standish	www.sjcme.edu
Colby College	Mayflower Hill Drive	Waterville	www.colby.edu
Colby College	Mayflower Hill Drive	Waterville	www.colby.edu

Applied Mathematics, General

Applied Mathematics. A program that focuses on the application of mathematics and statistics to the solution of functional problems in fields such as engineering and the applied sciences. Includes instruction in natural phenomena modeling continuum mechanics, reaction-diffusion, wave propagation, dynamic systems, numerical analysis, controlled theory, asymptotic methods, variation, optimization theory, inverse problems, and applications to specific scientific and industrial topics.

No schools available for the program

Mathematical Statistics

Statistics, General. A general program that focuses on the relationships between groups of measurements, and similarities and differences, using probability theory and techniques derived from it. Includes instruction in the principles in probability theory, binomial distribution, regression analysis, standard deviation, stochastic processes, Monte Carlo method, Bayesian statistics, non-parametric statistics, sampling theory, and statistical techniques.

Institution	Address	City	URL
University of Southern Maine	96 Falmouth St	Portland	www.usm.maine.edu

Mathematical Statistics and Probability

Mathematical Statistics and Probability. A program that focuses on the mathematical theory underlying statistical methods and their use. Includes instruction in probability theory parametric and non-parametric inference, sequential analysis, multivariate analysis, Bayesian analysis, experimental design, time series analysis, resampling, robust statistics, limit theory, infinite particle systems, stochastic processes, martingales, Markov processes, and Banach spaces.

No schools available for the program

Statistics, Other

Statistics, Other. Any instructional program in statistics not listed above.

No schools available for the program

Business Statistics

Business Statistics. A program that focuses on the application of mathematical statistics to the description, analysis, and forecasting of business data. Includes instruction in statistical theory and methods, computer applications, data analysis and display, long- and short-term forecasting methods, and market performance analysis.

No schools available for the program

Maine Statewide Promotion Opportunities for Operations Research Analysts

O*NET Code	Title	Grand TORQ	Job Zone	Employment	Median Wage	Difference	Growth	Annual Job Openings
15-2031.00	Operations Research Analysts	100	5	180	$64,140.00	$0.00	12%	6
13-2051.00	Financial Analysts	83	4	210	$71,380.00	$7,240.00	10%	4
15-1032.00	Computer Software Engineers, Systems Software	83	4	290	$73,410.00	$9,270.00	11%	8
19-2012.00	Physicists	82	5	50	$93,210.00	$29,070.00	-4%	1
11-3021.00	Computer and Information Systems Managers	80	5	870	$83,130.00	$18,990.00	8%	21
17-2112.00	Industrial Engineers	80	4	580	$68,350.00	$4,210.00	11%	22
17-2071.00	Electrical Engineers	80	4	260	$73,050.00	$8,910.00	-10%	6
17-2131.00	Materials Engineers	80	4	40	$70,250.00	$6,110.00	-7%	1
17-2121.02	Marine Architects	80	4	60	$75,520.00	$11,380.00	-9%	1
13-2052.00	Personal Financial Advisors	79	3	360	$94,100.00	$29,960.00	10%	13
17-2141.00	Mechanical Engineers	79	4	620	$67,210.00	$3,070.00	-9%	14
19-2043.00	Hydrologists	79	5	130	$71,270.00	$7,130.00	16%	5
17-2041.00	Chemical Engineers	78	4	170	$81,330.00	$17,190.00	-17%	5
11-9121.00	Natural Sciences Managers	78	5	180	$79,810.00	$15,670.00	8%	5
11-9041.00	Engineering Managers	77	5	720	$91,030.00	$26,890.00	-2%	14

Top Industries for Statisticians

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Federal government, excluding postal service	919999	19.42%	4,353	4,115	-5.47%
Research and development in the physical, engineering, and life sciences	541710	12.06%	2,703	2,884	6.69%
Colleges, universities, and professional schools, public and private	611300	10.80%	2,420	2,708	11.87%
State government, excluding education and hospitals	929200	8.66%	1,941	1,905	-1.87%
Self-employed workers, secondary job	000602	6.03%	1,353	1,347	-0.45%
Management of companies and enterprises	551100	4.10%	919	1,060	15.28%
Pharmaceutical and medicine manufacturing	325400	3.98%	891	1,123	26.03%
General medical and surgical hospitals, public and private	622100	2.64%	592	655	10.71%
Direct insurance (except life, health, and medical) carriers	524120	2.55%	572	598	4.52%
Management, scientific, and technical consulting services	541600	2.53%	566	1,011	78.52%
Local government, excluding education and hospitals	939300	1.54%	345	387	12.34%
Offices of physicians	621100	1.36%	306	385	25.98%
Other fabricated metal product manufacturing	332900	1.29%	288	255	-11.40%
Research and development in the social sciences and humanities	541720	1.12%	252	267	5.82%
Postal service	491100	0.81%	181	184	1.79%

Top Industries for Operations Research Analysts

Industry	NAICS	% in Industry	Employment	Projected Employment	% Change
Management, scientific, and technical consulting services	541600	9.10%	5,311	9,058	70.57%
Computer systems design and related services	541500	8.26%	4,822	6,221	29.00%
State government, excluding education and hospitals	929200	6.33%	3,695	3,464	-6.24%
Federal government, excluding postal service	919999	6.31%	3,682	2,993	-18.71%
Management of companies and enterprises	551100	5.97%	3,484	3,837	10.14%
Depository credit intermediation	522100	4.87%	2,840	2,766	-2.59%
Data processing, hosting, and related services	518200	3.95%	2,303	2,974	29.16%
Wired telecommunications carriers	517100	2.41%	1,409	1,057	-24.99%
Research and development in the physical, engineering, and life sciences	541710	2.40%	1,402	1,429	1.93%
Local government, excluding education and hospitals	939300	2.19%	1,275	1,369	7.33%

Professional and commercial equipment and supplies merchant wholesalers	423400	2.14%	1,246	1,388	11.37%
Colleges, universities, and professional schools, public and private	611300	2.10%	1,227	1,311	6.89%
Other nondepository credit intermediation, including real estate credit and consumer lending	522290	1.99%	1,164	1,333	14.58%
Securities and commodity contracts, brokerages, and exchanges	5231-2	1.84%	1,076	1,505	39.85%
General medical and surgical hospitals, public and private	622100	1.77%	1,035	1,094	5.78%

